

1 THAT WHICH IS CLAIMED:

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1 1. A method of using voice activated commands to instruct electronic
2 equipment to perform one or more functions, comprising:
3 receiving at a remote control device speech representing a user
4 command;
5 digitizing the speech at the remote control device;
6 compressing the digitized speech;
7 transmitting the compressed digitized speech wirelessly to the electronic
8 equipment;
9 receiving the compressed digitized speech at the electronic equipment;
10 decompressing the digitized speech; and
11 performing at the electronic equipment a function based upon a stored
12 instruction associated with the digitized speech.

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1 2. The method of claim 1, wherein receiving at a remote control
2 device speech representing a user command comprises receiving at a remote
3 control device user instructions and unwanted ambient audio.

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1 3. The method of claim 2, wherein the unwanted ambient noise
2 comprises background noise generated by sources other than the electronic
3 equipment.

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1 4. The method of claim 1, wherein transmitting the compressed
2 digitized speech wirelessly comprises transmitting the compressed digitized
3 speech over a wireless communication channel for digitized media.

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1 12. The method of claim 11, wherein the step of subtracting the
2 unwanted ambient audio from the decompressed digitized speech occurs before
3 the at least a portion of the digitized speech is compared to the dictionary of
4 speech segments.

1 13. The method of claim 11, wherein the unwanted ambient audio
2 comprises audio generated by the electronic equipment.

1 14. The method of claim 13, wherein the unwanted ambient audio
2 further comprises background noise generated by sources other than the
3 electronic equipment.

1 15. The method of claim 13, wherein the unwanted ambient audio is
2 emitted by a speaker associated with a television set.

1 16. The method of claim 13, wherein the unwanted ambient audio
2 generated by the electronic equipment corresponds to a program broadcast by a
3 TV station.

1 17. The method of claim 11, further comprising the step of storing
2 unwanted ambient audio generated by the electronic equipment in memory in
3 the electronic equipment.

1 18. The method of claim 17, wherein the unwanted ambient audio is
2 stored in memory in the electronic equipment for an amount of time determined
3 by a longest expected digitized speech command from a user.

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19. The method of claim 17, wherein the unwanted ambient audio stored in memory is updated with new unwanted ambient audio as time progresses, and wherein the new unwanted ambient audio comprises television program audio.

20. The method of claim 13, further comprising the step of storing a time-shifted delay version of the unwanted ambient audio in the electronic equipment.

21. The method of claim 13, further comprising the step of storing a time-shifted delay version of the unwanted ambient audio in memory in the electronic equipment.

22. The method of claim 20, wherein the time-shifted delay version of the unwanted ambient audio stored in memory is matched with the unwanted ambient audio in the decompressed digitized speech.

23. The method of claim 22, further comprising the step of subtracting the unwanted ambient audio from the decompressed digitized speech.

24. The method of claim 23, further comprising the step of identifying at least one dictionary speech segment associated with at least a portion of the decompressed digitized speech.

25. The method of claim 24, further comprising the step of assigning a matching score to each portion of decompressed digitized speech associated with at least one dictionary speech segment.

1 26. The method of claim 25, further comprising the step of rejecting at
2 least a portion of decompressed digitized speech representing a user command
3 each matching score falls below a threshold value.

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1 27. The method of claim 26, further comprising the step of requesting
2 the user to repeat the user command.

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1 28. The method of claim 24, further comprising the step of
2 graphically displaying a function associated with the at least one identified
3 dictionary speech segment.

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1 29. The method of claim 24, further comprising the step of audibly
2 identifying the function associated with the at least one identified dictionary
3 speech segment.

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1 30. The method of claim 24, wherein comparing at least a portion of
2 the decompressed digitized speech to a dictionary of speech segments further
3 comprises producing a matching score representing the likelihood of a match
4 between the at least one portion of the decompressed digitized speech and at
5 least one speech segment in the dictionary of speech segments.

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1 31. The method of claim 1, wherein the electronic equipment is a
2 digital home communication terminal.

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1 32. The method of claim 31, wherein the digital home communication
2 terminal is a cable television digital home communication terminal.

1 33. The method of claim 31, wherein the digital home communication
2 terminal is a satellite digital home communication terminal.

1 34. The method of claim 1, further comprising the step of querying a
2 user for said speech representing a user command.

1 35. The method of claim 34, wherein the step of querying comprises
2 graphically requesting the user for said speech representing a user command.

1 36. The method of claim 34, wherein the step of querying comprises
2 audibly requesting the user for said speech representing a user command.

1 37. The method of claim 34, further comprising the step of graphically
2 displaying the received user command.

1 38. The method of claim 34, further comprising the step of audibly
2 identifying the received user command.

1 39. The method of claim 1, wherein the compressed digitized speech
2 controls an electronic program guide appliance of the electronic equipment.

1 40. The method of claim 39, wherein the electronic equipment is
2 associated with a television and the electronic program guide appliance includes
3 a graphical user interface presentable on a display.

1 41. The method of claim 39, wherein the electronic program guide
2 appliance resides in memory in the electronic equipment.

1 42. The method of claim 1, wherein the decompressed digital speech
2 controls an electronic program guide navigation of the electronic equipment.

1 43. A remote control apparatus that receives voice activated
2 commands, comprising:

3 a first microphone;

4 an enable microphone function, wherein the at least one enable
5 microphone function activates the first microphone such that the first
6 microphone can receive one or more inputs;

7 at least one processor for digitizing inputs received at the first
8 microphone; and

9 at least one transmitter for wirelessly transmitting the digitized inputs to a
10 device associated with the remote control apparatus.

1 44. The remote control apparatus of claim 43, wherein the one or more
2 inputs comprise voice commands.

1 45. The remote control apparatus of claim 43, further comprising a
2 plurality of function keys.

1 46. The remote control apparatus of claim 45, wherein at least one of
2 the plurality of function keys is associated with one or more inputs, and wherein
3 the one or more inputs are voice activated commands.

1 47. The remote control apparatus of claim 45, wherein the one or more
2 inputs comprise the pressing of at least of the plurality of function keys in
3 combination with one or more voice commands.

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1 48. The remote control apparatus of claim 47, wherein the one or more
2 voice commands effect control of a television.

1 49. The remote control apparatus of claim 47, wherein the one or more
2 voice commands effect control of an electronic program guide.

1 50. The remote control apparatus of claim 43, wherein the enable
2 microphone function is in an active state when a user depresses a function key
3 on remote control apparatus.

1 51. The remote control apparatus of claim 50, wherein the enable
2 microphone function comprises a spring-force level switch that is placed in an
3 active state when a user depresses the switch.

1 52. The remote control apparatus of claim 43 wherein the enable
2 microphone function is a two position on/off switch.

1 53. The remote control apparatus of claim 45, wherein at least one
2 function key of the plurality of function keys is selected from the group
3 consisting of a toggle switch, a button, and a spring-force level switch.

1 54. The remote control apparatus of claim 43, further comprising at
2 least one standby command that identifies when the at least one enable
3 microphone function is enabled.

1 55. The remote control apparatus of claim 54, wherein the standby
2 command is generated autonomously by the remote control apparatus.

1 56. The remote control apparatus of claim 54, wherein the standby
2 command is generated upon detection of the completion of the one or more
3 inputs.

1 57. The remote control apparatus of claim 56, wherein the completion
2 of the one or more inputs is detected by the remote control apparatus when the
3 level of the one or more inputs falls below a first threshold value.

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1 58. The remote control apparatus of claim 56, wherein the standby
2 command is encoded and transmitted by the remote control apparatus over a
3 wireless channel for reception by the device.

1 59. The remote control apparatus of claim 57, wherein the standby
2 command is compressed prior to being transmitted by remote control device.

1 60. The remote control apparatus of claim 57, wherein the standby
2 command effects decompression of speech to cease in the device.

1 61. The remote control apparatus of claim 43, further comprising a
2 digital signal filter, wherein the digital signal filter is operative to reduce
3 ambient noise received by the first microphone.

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1 62. The remote control apparatus of claim 61, wherein the digital
2 signal filter comprises a band pass filter.

1 63. The remote control apparatus of claim 43, further comprising a
2 second microphone, wherein the second microphone is operative to assist in
3 canceling noise received by the first microphone.

1 64. The remote control apparatus of claim 63, wherein the at least one
2 processor is operative to digitize one or more inputs received by the second
3 microphone.

1 65. The remote control apparatus of claim 43, further comprising at
2 least one speech encoder that encodes speech received at the first microphone
3 when the level of the one or more inputs is above a threshold value established
4 by the at least one processor.

1 66. The remote control apparatus of claim 65, further comprising at
2 least one standby command that identifies when the at least one enable
3 microphone function is enabled.

1 67. The remote control apparatus of claim 66, wherein the standby
2 command is transmitted to the device when the level of the one or more inputs
3 falls below a second threshold value.

1 68. The remote control apparatus of claim 43, further comprising a
2 Internet Protocol address associated with the remote control apparatus.

1 69. A home communication terminal that receives voice activated
2 commands and, based upon the voice activated commands, instructs electronic
3 equipment to perform one or more functions, comprising:

4 a receiver, wherein the receiver receives encoded digitized signals from
5 at least one remote device, and wherein the encoded digitized signals include
6 one or more signals representing at least one voice activated command;

7 at least one speech decoder, wherein the at least one speech decoder
8 decodes the encoded digitized signals;

9 at least one memory, wherein the at least one memory stores at least a
10 portion of the decoded digitized signals;

11 at least one audio buffer, for storing audio signals broadcasted by a
12 device in electrical communication with the receiver;

13 at least one processor, wherein the at least one processor eliminates
14 stored audio signals from the decoded digitized signals, such that the resulting
15 decoded digitized signals do not contain audio signals broadcasted by the
16 device in electrical communication with the receiver; and

17 at least one comparison component, wherein the at least one comparison
18 component matches at least a portion of the resulting decoded digital signals to
19 one or more commands representing at least one function the home
20 communication terminal is operative to perform.

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1 70. The home communication terminal of claim 69 wherein the
2 encoded digitized signals further comprise unwanted signals.

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1 71. The home communication terminal of claim 70, further comprising
2 at least one digital signal filter, wherein the digital signal filter is operative to
3 reduce the unwanted signals in the decoded digitized signals.

1 72. The home communication terminal of claim 69, further comprising
2 an infrared receiver that receives infrared commands transmitted from the at
3 least one remote device.

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1 73. The home communication terminal of claim 69, further comprising
2 a Internet Protocol address associated with the home communication terminal.

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1 74. The home communication terminal of claim 69, further comprising
2 an electronic program guide (EPG) application controllable by the at least one
3 remote device via the at least one voice activated command.

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1 75. The home communication terminal of claim 74, further comprising
2 program information stored in the at least one memory and accessible by the
3 EPG application.

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1 76. The home communication terminal of claim 69, wherein the at
2 least one memory further comprises a dictionary of terms, wherein each term is
3 associated with the one or more commands representing the at least on function
4 the home communication terminal is operative to perform.

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1 77. The home communication terminal of claim 76, wherein each term
2 is associated with a television function.

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1 78. The home communication terminal of claim 74, wherein the at
2 least one memory further comprises a dictionary of terms, wherein each term is
3 associated with the one or more commands representing the at least on function
4 the home communication terminal is operative to perform.

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1 85. The home communication terminal of claim 83, wherein each
2 version of the versions of the one or more signals representing the at least one
3 voice activated command input during the training procedure is associated with
4 an electronic program guide application command.

1 86. The home communication terminal of claim 80, wherein the
2 training procedure application associates a sequence of keys pressed on the at
3 least one remote device with one or more terms in the dictionary of terms.

1 87. The home communication terminal of claim 80, wherein the
2 training procedure application is stored in the at least one memory of the home
3 communication terminal.

1 88. The home communication terminal of claim 80, wherein the
2 dictionary of terms is stored in the at least one memory of the home
3 communication terminal.

1 89. The home communication terminal of claim 80, wherein the
2 training procedure application audibly instructs a user of the home
3 communication terminal not to speak.

1 90. The home communication terminal of claim 80, wherein the
2 training procedure application graphically instructs a user of the home
3 communication terminal not to speak.

1 91. The home communication terminal of claim 69, wherein the
2 processor of the home communication terminal estimates the distance of remote

3 control by emitting a pulsed non-speech signal that is received at the remote
4 device.

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2 92. The home communication terminal of claim 91, wherein the
processor receives the pulsed non-speech signal from the remote device.

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2 93. The home communication terminal of claim 92, wherein the
processor stores the non-speech pulsed signal in memory and compares the
3 pulsed non-speech signal received from the remote device with the non-speech
4 pulsed signal in memory.

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2 94. The home communication terminal of claim 80, wherein the
training procedure application estimates ambient audio degradation by
3 comparing emitted TV program audio with a the audio signals broadcasted by a
4 device in electrical communication with the receiver.

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2 95. The home communication terminal of claim 70, further comprising
a training procedure application, wherein the training procedure application
3 calculates the time delay between audio signals broadcasted by a device in
4 electrical communication with the receiver and at least some of the unwanted
5 signals.

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2 96. The home communication terminal of claim 69, further comprising
a graphical user interface application, which operates in conjunction with the
3 processor to display the one or more commands representing at least one
4 function the home communication terminal is operative to perform.

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2 97. The home communication terminal of claim 69, further comprising
3 a timer, wherein the timer is operative to time-match the audio signals
4 generated by the device in electrical communication with the receiver with the
5 encoded digitized signals received by the receiver.

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1 98. The home communication terminal of claim 69, further comprising
2 at least one microphone for receiving audio signals.

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